ETH zürich

How Simple Heuristics Influence Laypeople‘s Risk Perception

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Consumer Behavior CB

Street Calculus

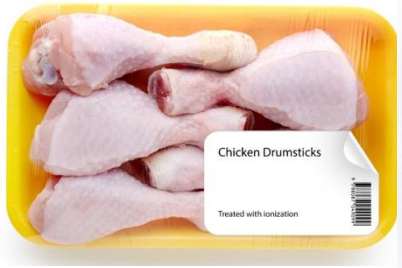
Two Modes of Thinking

Experiential system	Analytic system
1. Holistic	1. Analytic
2. Affective: pleasure-pain oriented	2. Logical: reason oriented (what is sensible)
3. Associationistic connections	3. Logical connections
4. Behavior mediated by “vibes” from past experiences	4. Behavior mediated by conscious appraisal of events
5. Encodes reality in concrete images, metaphors, and narratives	5. Encodes reality in abstract symbols, words, and numbers
6. More rapid processing: oriented toward immediate action	6. Slower processing: oriented toward delayed action
7. Self-evidently valid: “experiencing is believing”	7. Requires justification via logic and evidence

Heuristics

- People often rely on heuristics to make judgments or decisions (e.g., availability, representativeness, affect heuristic)
- A general feature of heuristic judgment is attribute substitution (Kahneman and Frederick, 2005)
- A target attribute (not readily accessible) is substituted by an heuristic attribute (which comes easier to mind)

Perception of Food Irradiation



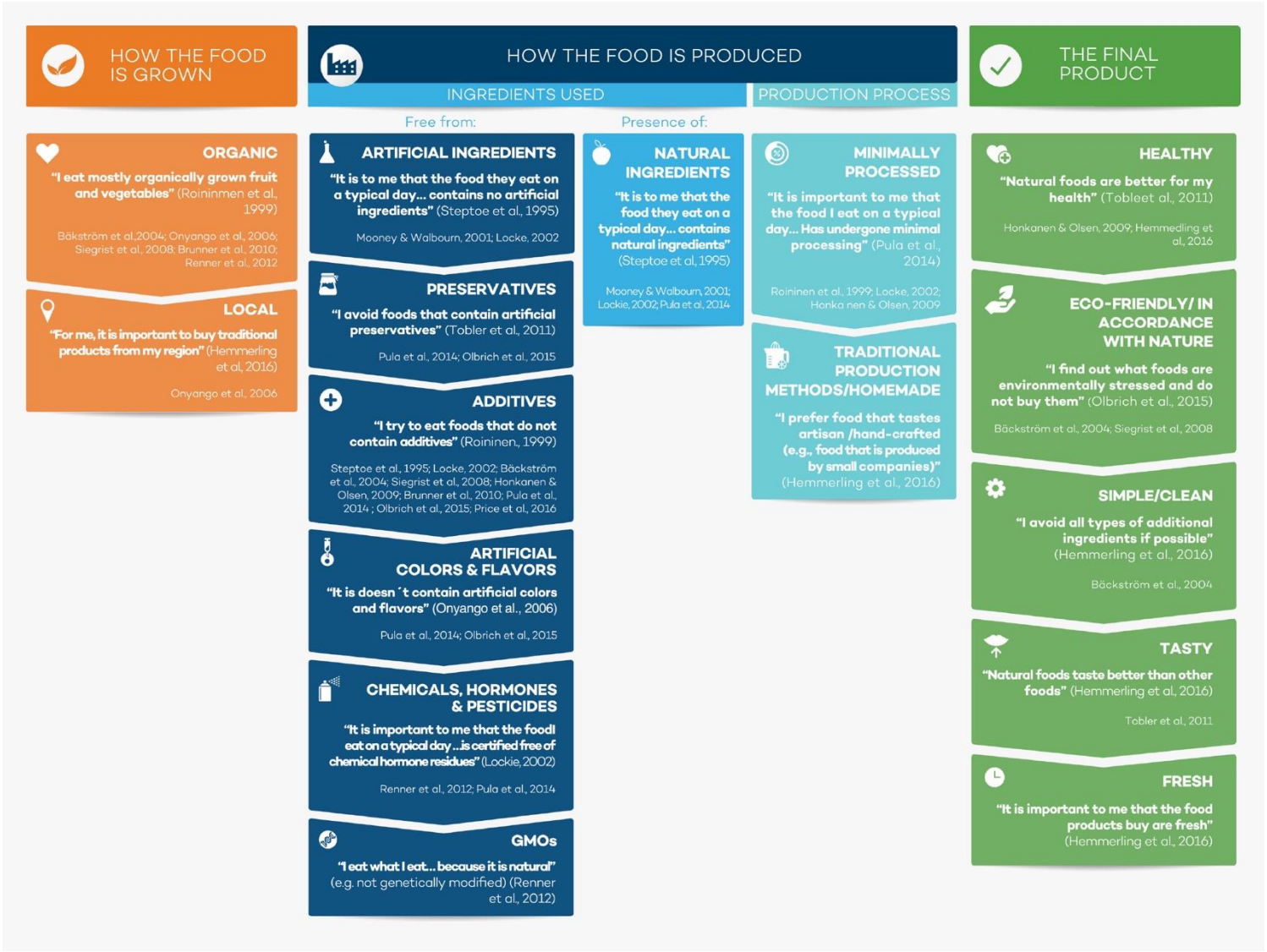
	Affect evoked by nuclear power
Affect evoked by nuclear power	-
Risk perception of food irradiation	-.36**
Benefit perception of food irradiation	.39**
Acceptance of food irradiation	.35**

Note: **: $p < .01$.

Bearth, & Siegrist, 2019

Natural is Better Heuristic

Nature is perceived in a very positive way in the West (benevolent, sacred)



Román, Sanchez-Siles, Siegrist, 2017


MISS MA
Shanghai
Miss Ma 优雅甜美，
对时令蔬果如数家珍；
每日晨起，挽起蕾丝花边衣袖，
萃取蔬果纯汁，
为心爱的马卡龙缤纷上色。
每个人心中都住着Miss Ma，
贴心，懂我，
有态度，有坚持，宁缺勿滥。
Using seasonal vegetables and fruits,
we make gorgeously naturally colored macarons.
Elegant & sweet,
Every morning, with our lace sleeves rolled up,
Pure fruit and vegetable juices are extracted,
Painting macarons with beloved colors.
Miss Ma macarons can be a way
to communicate through food with others,
a way to show caring or gratitude,
Miss Ma represents each one of us,
sweet in the center and colored by nature.
蔬彩马卡龙第一品牌
源自蔬果，纯萃天然。
The First All Natural Vegetable Colored Macarons,
No artificial coloring or preservatives added.

Does affect mediate the perception of Nature- and Human-caused harm?

- Human caused event
  - „On an oil platform, a large amount of oil leaked into the sea. As a result of this oil spill, more than 1,200 birds have been killed.“

- Nature caused event
  - “Due to natural oil seeps at the bottom of the sea (oil leaks through channels and cracks in rock formations), a large amount of oil leaked into the sea. As a result of this oil spill, more than 1,200 birds have been killed.”

Siegrist & Sütterlin (2014)

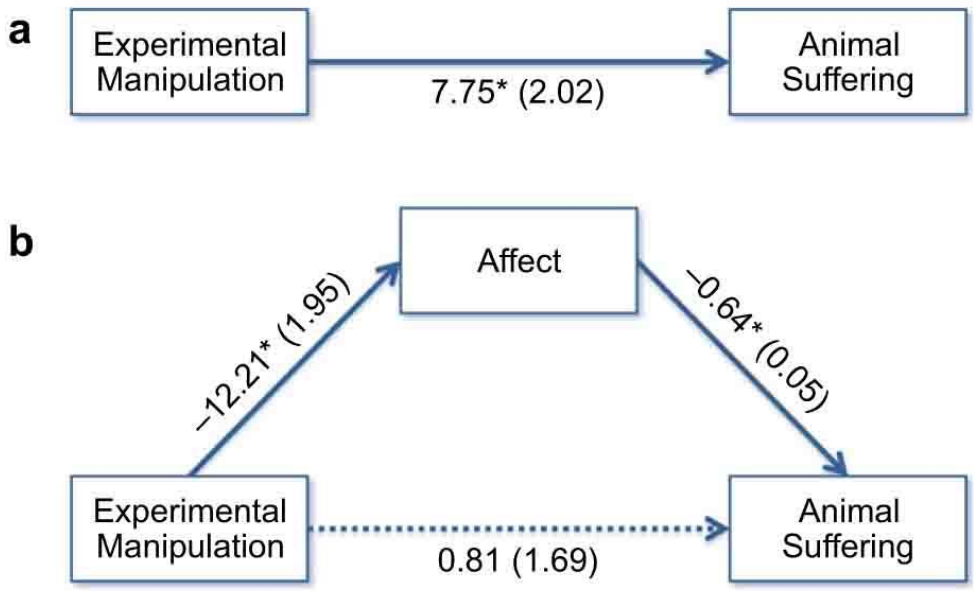


Fig. 2. Results of the mediation analyses of experiment 2 for the variable animal suffering caused by the event. Direct effects are shown in (a). The model with the mediator variable affect is shown in (b). Nonstandardized coefficients (and standard errors in parentheses) are shown. Nonsignificant paths are shown as dotted lines. *$p < .001$.

Siegrist & Sütterlin (2014)

Experimental Material

- Gene technologically modified plant
  - A new corn variety was gene technically modified that can better cope with stress situations such as droughts. A gene from a bacterium was used for the genetically modification of the new corn variety. This new breed results in a yield increase of 6-10% with unchanged production cost.
- Conventionally bred plant
  - A new corn variety was bred that can better cope with stress situations such as droughts. This new breed results in a yield increase of 6-10% with unchanged production cost.

How do you evaluate from the standpoint of the farmer the decision to plant this new corn variety? (0=very negative – 100=very positive)

Group	N	M	SD
GM	278	37.8	28.8
Conventional	276	61.5	24.8

t=10.39, p<.001

As how important do you assess these additional revenues for a farmer who solely cultivates corn? (0=not important at all – 100=very important)

Group	N	M	SD
GM	278	52.2	26.6
Conventional	276	68.9	21.3

t=8.14, *p*<.001

Table 1
Means (standard deviations) of the responses to the scenarios used in Experiment 1.

Items	Applied technology		Cohen's d
	Conventional technology ($n = 276$)	Gene technology ($n = 278$)	
Variables measured before information about the new corn breed was provided			
Affect evoked by corn (0 = negative, 100 = positive)	55.16 (29.69)	22.73 (22.50)	1.23
Perceived naturalness of corn (0 = unnatural, 100 = natural)	62.66 (27.55)	20.09 (21.24)	1.73
Variables measured after information about the new corn breed was provided			
Evaluation of a farmer's decision to plant this new corn variety (0 = very negative, 100 = very positive)	61.49 (24.80)	37.78 (28.76)	0.88
Assessed importance of these additional revenues for a farmer cultivating corn (0 = not important at all, 100 = very important)	68.92 (21.31)	52.23 (26.64)	0.69

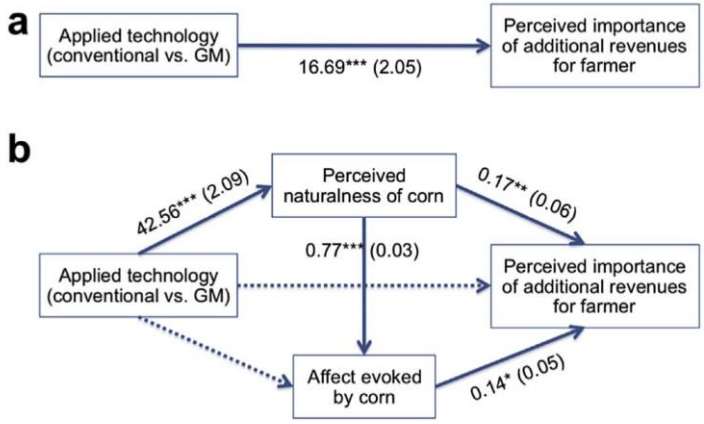


Fig. 2. Results of the mediation analysis of Experiment 1 for perceived importance of additional revenues for the farmer. The applied technology (i.e., experimental manipulation) variable was dummy coded (0 = gene technology, 1 = conventional technology). a) shows the total effect. b) shows the model with perceived naturalness and evoked affect as mediator variables. Nonstandardized coefficients (SEs) are presented. Nonsignificant paths are depicted as dotted lines. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

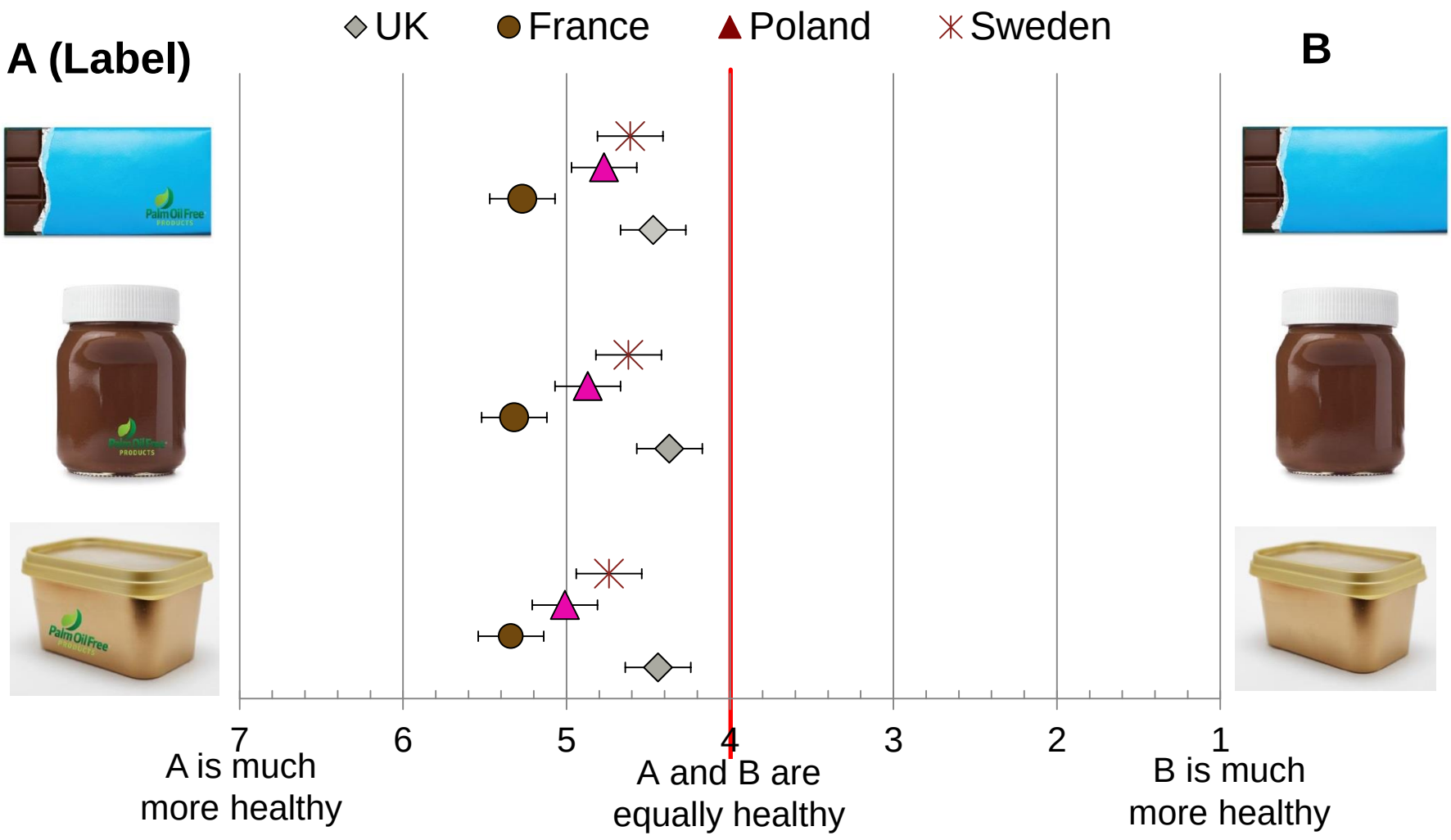
Healthiness perception

- Participants were shown two products:

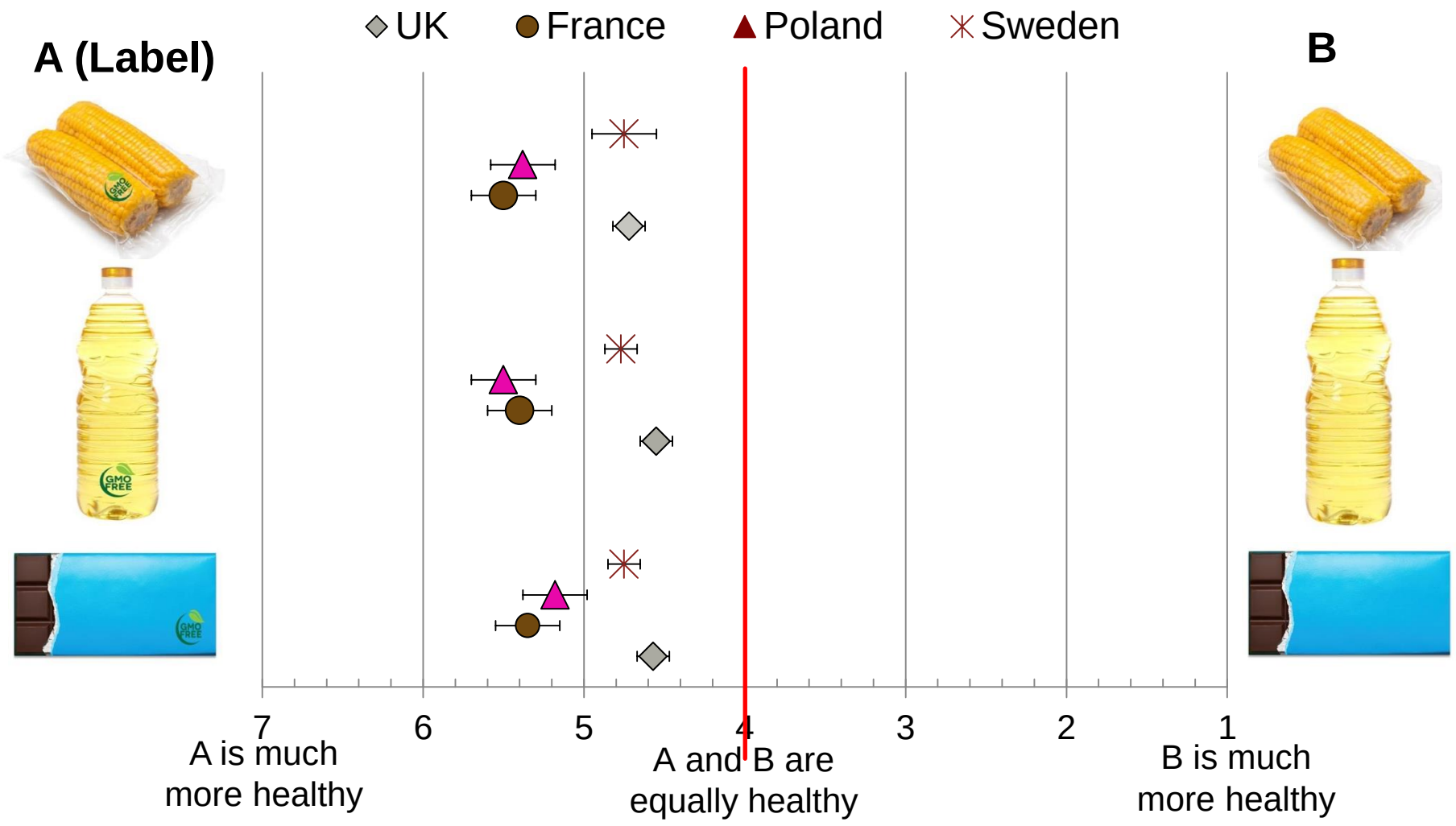
A B

- Please evaluate the healthiness of the two products.
  - ❑ A is much more healthy.
  - ❑ A is moderately more healthy.
  - ❑ A is slightly more healthy.
  - ❑ A and B are equally healthy.
  - ❑ B is slightly more healthy.
  - ❑ B is moderately more healthy.
  - ❑ B is much more healthy.

Please evaluate the healthiness of the two products.



Please evaluate the healthiness of the two products.

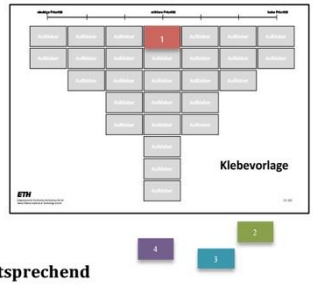


Schritt 1

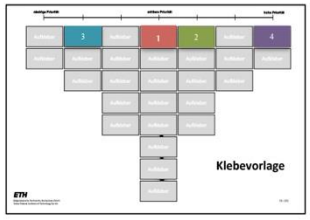
Bitte lesen Sie die verschiedenen Risikoszenarien durch. Für jedes Risikoszenario gibt es neben der ausführlichen Beschreibung, **Übungskärtchen** in einem Briefumschlag und **Aufkleber**. Bitte schauen Sie zudem die **Klebevorlage** an.

Schritt 2

Bitte denken Sie nun an Folgendes: Das Kantonale Labor ist für Kontrollen im Lebensmittel- und Gebrauchsgegenständebereich verantwortlich (z.B. Gesundheitsrisiken, Konsumententäuschung, fehlende Hygiene). **Wie soll das Kantonale Labor für die Risikoszenarien seine Kontrollen priorisieren?**



Bitte ordnen Sie die Übungskärtchen entsprechend Ihrer Priorisierung auf der Klebevorlage an. Welches Risikoszenarium hat für Sie niedrige, mittlere oder hohe Priorität? Anhand der vorgedruckten Kästchen erkennen Sie, wie viel Risikoszenarien jeder Prioritätsstufe zugeordnet werden können. Damit die Daten später vergleichbar sind, müssen Sie sich bitte unbedingt an das vorgegebene **Schema** halten.

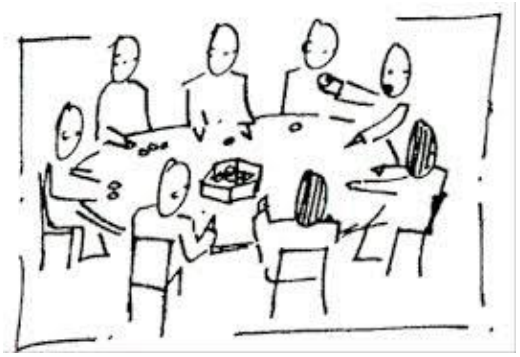


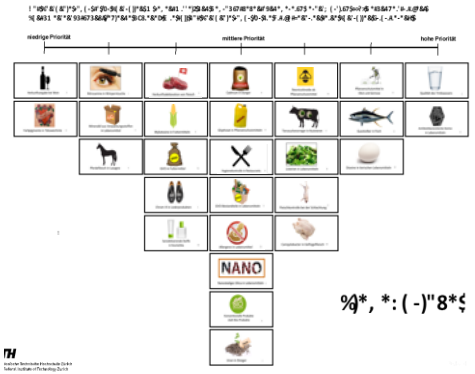
Schritt 3

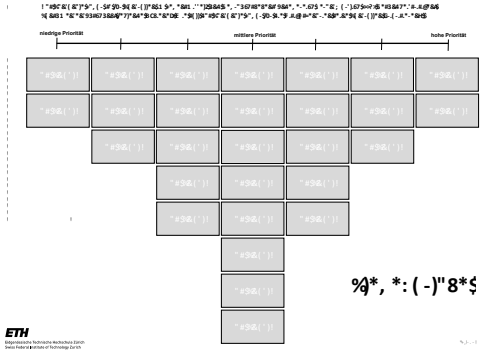
Wenn Sie sich sicher sind, dass Sie eine Anordnung gefunden haben, die Ihre Meinung zutreffend widerspiegelt, dann können Sie die Übungskärtchen durch **Aufkleber ersetzen** und Ihre Priorisierung fixieren.

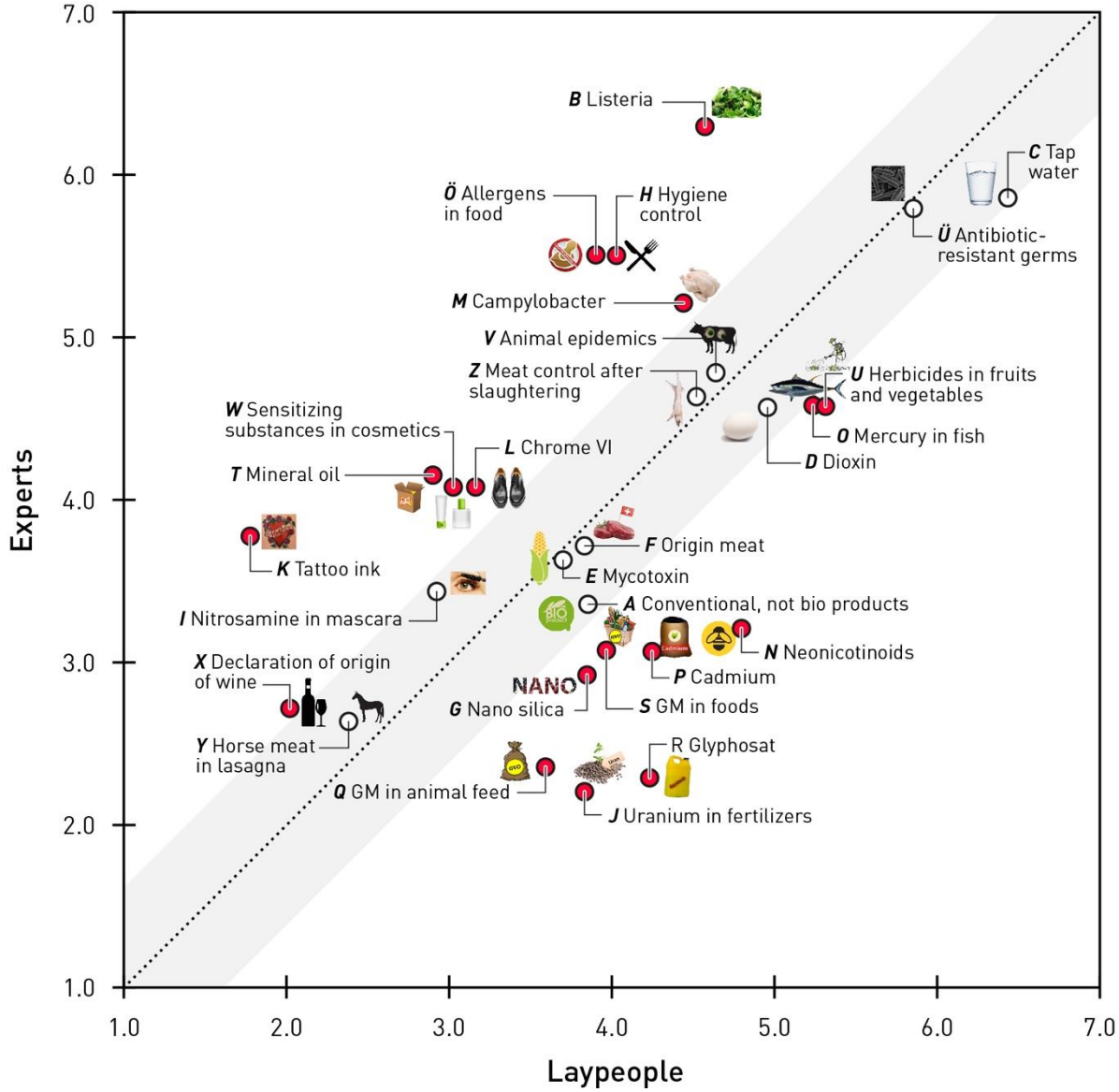
Schritt 4

Stecken Sie bitte die Klebevorlage in den frankierten **Rückumschlag** und senden ihn uns zurück.









Siegrist et al., 2018

Reasons for Lack of Acceptance of GT

- Lack of trust in food industry and science
- Benefit perception
  - GT does not provide tangible benefits to consumers in the West
- Moral values
  - GT is viewed as very unnatural
  - GT applications evoke disgust
  - Disgust sensitive people are less likely to accept GT
- Contagion intuition (Scott et al., 2018)
  - GT is judged as unnatural because there is a contamination by human processing

Discussion

- Consumers decisions are often the result of the experiential system
- Differences between experts (utilizing the analytic system) and lay people (utilizing the experiential system)
- What will **not** work in order to increase acceptance of GT?
  - Provision of additional knowledge to lay people
  - Demonstrating that there are no risks associated with GT
- What could work?
  - GT provides tangible benefits to consumers in the West
  - Demonstrate the moral issues associated with not-using GT (e.g., malnutrition)